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10/512,039	10/20/2004	Michio Miwa	37121	2275

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PEARNE & GORDON LLP  
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EXAMINER
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MEYERS, JAMES A

ART UNIT	PAPER NUMBER
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2609

MAIL DATE	DELIVERY MODE
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05/16/2007

PAPER

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

## Office Action Summary

**Application No.**

10/512,039

**Applicant(s)**

MIWA ET AL.

**Examiner**

James A. Meyers

**Art Unit**

2609

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 10 October 2004.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1-27 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-3,8,11,14 and 17-27 is/are rejected.
- 7) ☒ Claim(s) 4-7,9,10,12,13,15 and 16 is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 10 October 2004 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some \* c) ☐ None of:
- 1) ☒ Certified copies of the priority documents have been received.
  - 2) ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  - 3) ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- |   |   |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)   | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)  | 5) <input type="checkbox"/> Notice of Informal Patent Application                       |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)<br>Paper No(s)/Mail Date <u>7/25/2006, 3/31/2007</u> . | 6) <input type="checkbox"/> Other: _____  |

### **DETAILED ACTION**

This action is in response the initial filing of October 20, 2004. Claims 1-27 are pending and have been considered below.

#### ***Information Disclosure Statement***

1. The listing of references in the specification is not a proper information disclosure statement. 37 CFR 1.98(b) requires a list of all patents, publications, or other information submitted for consideration by the Office, and MPEP § 609.04(a) states, "the list may not be incorporated into the specification but must be submitted in a separate paper." Therefore, unless the references have been cited by the examiner on form PTO-892, they have not been considered.

#### ***Drawings***

2. Figures 39-41 should be designated by a legend such as --Prior Art-- because only that which is old is illustrated. See MPEP § 608.02(g). Corrected drawings in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. The replacement sheet(s) should be labeled "Replacement Sheet" in the page header (as per 37 CFR 1.84(c)) so as not to obstruct any portion of the drawing figures. If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

### ***Specification***

The disclosure is objected to because of the following informalities:

3. 35 U.S.C. 112, first paragraph, requires the specification to be written in "full, clear, concise, and exact terms." The specification is replete with terms which are not clear, concise and exact. The specification should be revised carefully in order to comply with 35 U.S.C. 112, first paragraph. Examples of some unclear, inexact or verbose terms used in the specification are: the use of the phrases "camera producing plant" and "automotive vehicle producing plant" (the Examiner does not believe Applicant intends to refer to locations where cameras and vehicles are produced) and the use of the phrase "coordination system" (the Examiner believes the phrase should be "coordinate system").
4. The Examiner notes the use of acronyms (e.g. CPU, RAM, ROM, CD-ROM, etc.) throughout the specification without first including a description in plain text, as required.
5. The specification contains the title **SPCIFICATION**. This should be corrected or removed.

Appropriate correction is required.

### ***Claim Objections***

6. Claims 1, 3, 8-12, 17-21 and 23-27 are objected to because of the following informalities: claim 10 appears to be missing the word "is" between "marker" and

Art Unit: 2609

"located" on line 16, page 53; claims 1, 3, 8-12, 17, 19-21, 23, and 25-27 contain the phrase "coordination system" which should be "coordinate system"; claims 17-21 and 23-27 contain the word "inductive" which should be "indicative". Appropriate correction is required.

7. Claims 15 and 16 are objected to under 37 CFR 1.75(c) as being in improper form because a multiple dependent claim cannot be dependent on any other multiple dependent claim. See MPEP § 608.01(n). Accordingly, the claims have not been further treated on the merits.

### ***Claim Rejections - 35 USC § 112***

8. The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

9. Claims 1, 14/1, 17, 22/17 and 23 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the enablement requirement. The claims contain subject matter which was not described in the specification in such a way as to enable one skilled in the art to which it pertains, or with which it is most nearly connected, to make and/or use the invention. Claims 1, 17 and 22 and claims dependent therefrom claim an apparatus, method and program for calibrating a camera without the use of a revising marker or a calibrating marker. However, the Examiner notes that all embodiments disclosed in the specification, including the related art, involve the use of a revising marker and/or a calibrating marker. One of ordinary skill in the art at the time

Art Unit: 2609

of the invention would not be able to make or use the claimed invention based upon the written description of the invention. The Examiner notes that if the rejected claims are amended to include a revising marker, they will be essential duplicates of Claims 8, 14/8, 20, 22/20 and 26.

Examiner's Note: The Applicant appears to be attempting to invoke 35 U.S.C 112 6<sup>th</sup> paragraph in Claims 1-4, 6-9 and 11-13 by using "means-plus-function" language. However, the Examiner notes that no specific structural limitations are disclosed in the specification for the cited functions. While the claims pass the first two tests of the three-prong test used to determine invocation of paragraph 6, since no specific structural limitations are disclosed, the claims do not meet the third test of the three-prong test. Therefore, 35 U.S.C. 112 6<sup>th</sup> paragraph has not been invoked when considering these claims below.

### ***Claim Rejections - 35 USC § 101***

10. 35 U.S.C. 101 reads as follows:

Whoever invents or discovers any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof, may obtain a patent therefor, subject to the conditions and requirements of this title.

Claims 23-27 are rejected under 35 U.S.C. 101 because the claimed invention is directed to non-statutory subject matter. Claims 23-27 are drawn to a computer program, per se. A computer program is not a series of steps or acts and thus is not a process. A computer program is not a physical article or object and as such is not a machine or manufacture. A computer program is not a combination of substances and

Art Unit: 2609

therefore not a composition of matter. Thus, a computer program by itself does not fall within any of the four categories of invention. Therefore Claims 23-27 are not statutory.

***Claim Rejections - 35 USC § 102***

11. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

12. Claims 2, 14/2, 18, 22/18 and 24 are rejected under 35 U.S.C. 102(b) as being anticipated by Atsushi et al. (JP 2001-116515).

**Claims 2, 18 and 24:** Atsushi discloses an apparatus, method and computer program comprising:

(a) means for storing optical position information in a coordinate system (page 3, paragraph 21); and

(b) means for calibrating optical position information on the basis of the image information (page 2, paragraph 4).

**Claims 14/2 and 22/18:** Atsushi discloses an apparatus and method as in Claims 2 and 18 above and further discloses that the imaging device is mounted on an automotive vehicle (page 2, paragraph 4).

***Claim Rejections - 35 USC § 103***

13. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

14. Claims 1, 3, 8, 11, 14/1, 14/3, 14/8, 14/11, 17, 19-21, 22/17, 22/19, 22/20, 22/21, 23 and 25-27 are rejected under 35 U.S.C. 103(a) as being unpatentable over Tanaka (US 6, 201,882) in view of Atsushi et al. (JP 2001-116515).

**Claims 1, 17 and 23:** Tanaka discloses a camera calibration apparatus, method and program comprising first and second housing position information storing means. Tanaka explicitly discloses calculating the position of a camera in a three-dimensional coordinate system (column 2, lines 16-17), but does not explicitly disclose that the information is being stored. However, it would have been obvious to one having ordinary skill in the art at the time of invention to store the calculated position. One would have motivated to store the calculated position information so that it would not have to be recalculated when the position was needed at a later point in the calculation process. Additionally, Tanaka discloses a first and second coordinate system (Figure 2). It would have been obvious to one having ordinary skill in the art at the time of invention that position of the housing could be stored in either coordinate system. One would have been motivated to store the information in the second coordinate system to



Art Unit: 2609

eliminate the need to perform a coordinate transform when the information was needed in the second coordinate system at a later point in the calculation process.

Additionally, Tanaka discloses first optical position information producing means (column 2, lines 4-6). While Tanaka does not explicitly disclose storing the first optical position information (first optical position information storing means), to do so would have been obvious to one having ordinary skill in the art at the time of the invention. One would have been motivated to store the information to reduce the processing load required by the producing means when the information was required at a later time. Also, it would have been obvious that any amount of optical position information could be stored (second optical position information storing means). As above, one would have been motivated to store the information to reduce the processing load required by the producing means when the information was required at a later time.

While Tanaka does not disclose means for calibrating the second optical position information on the basis of the image information, Atsushi does disclose such means (page 2, paragraph 4). It would have been obvious to one having ordinary skill in the art at the time of invention to add the means for calibrating of Atsushi into the apparatus, method and program of Tanaka. One would have been motivated to do so to increase the positional accuracy of the camera calibration apparatus of Tanaka.

Neither Tanaka nor Atsushi disclose means for producing second optical position information from the second housing position information on the basis of the first housing position information and the first optical position information. However, Applicant has admitted that this is a known feature in conventional camera calibrating

Art Unit: 2609

apparatuses (page 2, lines 20-26). Therefore, it would have been obvious to one having ordinary skill in the art at the time of invention to include the second optical position information storing means in the apparatus, method and program of Tanaka. One would have been motivated to do so to because it was a known step in a typical camera calibration apparatus, the implementation of which would eliminate the need to develop a new means for producing the information.

**Claims 3, 19 and 25:** Tanaka discloses a camera calibration apparatus, method and program comprising first and second housing position information storing means.

Tanaka explicitly discloses calculating the position of a camera in a three-dimensional coordinate system where a revising/calibrating marker (a sphere) is located (column 2, lines 16-17), but does not explicitly disclose that the information is being stored.

However, it would have been obvious to one having ordinary skill in the art at the time of invention to store the calculated position. One would have motivated to store the calculated position information so that it would not have to be recalculated when the position was needed at a later point in the calculation process. Additionally, Tanaka discloses a first and second coordinate system (Figure 2). It would have been obvious to one having ordinary skill in the art at the time of invention that position of the housing could be stored in either coordinate system. One would have been motivated to store the information in the second coordinate system to eliminate the need to perform a coordinate transform when the information was needed in the second coordinate system at a later point in the calculation process.

Additionally, Tanaka discloses first optical position information producing means producing information on the basis of the revising marker (column 2, lines 4-8). While Tanaka does not explicitly disclose storing the first optical position information (first optical position information storing means), to do so would have been obvious to one having ordinary skill in the art at the time of the invention. One would have been motivated to store the information to reduce the processing load required by the producing means when the information was required at a later time. Also, it would have been obvious that any amount of optical position information could be stored (second optical position information storing means). As above, one would have been motivated to store the information to reduce the processing load required by the producing means when the information was required at a later time.

Tanaka also discloses means for producing estimated location information indicative of a position of the calibrating marker (column 1, line 65 to column 2, line 4). Means for storing the estimated location information are inherent in the system as the estimated location information is used in a later calculation.

While Tanaka does not disclose means for calibrating the second optical position information on the basis of the image information of the calibrating marker, Atsushi does disclose such means (page 2, paragraph 4). It would have been obvious to one having ordinary skill in the art at the time of invention to add the means for calibrating of Atsushi into the apparatus, method and program of Tanaka. One would have been motivated to do so to increase the positional accuracy of the camera calibration apparatus of Tanaka. Though Atsushi does not disclose it, it also would

Art Unit: 2609

have been obvious to one having ordinary skill in the art to use the estimated location information in the calibration means. One would have been motivated to do so because using an estimated location instead of relying solely on the calculated position would produce a better result.

Neither Tanaka nor Atsushi disclose means for producing second optical position information from the second housing position information on the basis of the first housing position information and the first optical position information. However, Applicant has admitted that this is a known feature in conventional camera calibrating apparatuses (page 2, lines 20-26). Therefore, it would have been obvious to one having ordinary skill in the art at the time of invention to include the second optical position information storing means in the apparatus, method and program of Tanaka. One would have been motivated to do so to because it was a known step in a typical camera calibration apparatus, the implementation of which would eliminate the need to develop a new means for producing the information.

**Claims 8, 20 and 26:** Tanaka discloses a camera calibration apparatus, method and program comprising first and second housing position information storing means.

Tanaka explicitly discloses calculating the position of a camera in a three-dimensional coordinate system where a revising marker (a sphere) is located (column 2, lines 16-17), but does not explicitly disclose that the information is being stored. However, it would have been obvious to one having ordinary skill in the art at the time of invention to store the calculated position. One would have motivated to store the calculated

Art Unit: 2609

position information so that it would not have to be recalculated when the position was needed at a later point in the calculation process. Additionally, Tanaka discloses a first and second coordinate system (Figure 2). It would have been obvious to one having ordinary skill in the art at the time of invention that position of the housing could be stored in either coordinate system. One would have been motivated to store the information in the second coordinate system to eliminate the need to perform a coordinate transform when the information was needed in the second coordinate system at a later point in the calculation process.

Additionally, Tanaka discloses first optical position information producing means producing information on the basis of the image information and indicative of the revising marker (column 2, lines 4-8). While Tanaka does not explicitly disclose storing the first optical position information (first optical position information storing means), to do so would have been obvious to one having ordinary skill in the art at the time of the invention. One would have been motivated to store the information to reduce the processing load required by the producing means when the information was required at a later time. Also, it would have been obvious that any amount of optical position information could be stored (second optical position information storing means). As above, one would have been motivated to store the information to reduce the processing load required by the producing means when the information was required at a later time.

While Tanaka does not disclose means for calibrating the second optical position information on the basis of the image information, Atsushi does disclose such means

(page 2, paragraph 4). It would have been obvious to one having ordinary skill in the art at the time of invention to add the means for calibrating of Atsushi into the apparatus, method and program of Tanaka. One would have been motivated to do so to increase the positional accuracy of the camera calibration apparatus of Tanaka. While neither Tanaka nor Atsushi disclose that the calibrating is done on the basis of a motion vector of the image information, it would have been obvious to one having ordinary skill in the art at the time of invention that any relational data contained in an image, including a motion vector, could be used for calibrating the image. One would have been motivated to use a motion vector to calibrate the image because it could accurately represent the change in the image between the two calculated positions.

Neither Tanaka nor Atsushi disclose means for producing second optical position information from the second housing position information on the basis of the first housing position information and the first optical position information. However, Applicant has admitted that this is a known feature in conventional camera calibrating apparatuses (page 2, lines 20-26). Therefore, it would have been obvious to one having ordinary skill in the art at the time of invention to include the second optical position information storing means in the apparatus, method and program of Tanaka. One would have been motivated to do so to because it was a known step in a typical camera calibration apparatus, the implementation of which would eliminate the need to develop a new means for producing the information.

**Claims 11, 21 and 27:** Tanaka discloses a camera calibration apparatus, method and program comprising first and second housing position information storing means.

Tanaka explicitly discloses calculating the position of a camera in a three-dimensional coordinate system where a revising/calibrating (a sphere) is located (column 2, lines 16-17), but does not explicitly disclose that the information is being stored. However, it would have been obvious to one having ordinary skill in the art at the time of invention to store the calculated position. One would have motivated to store the calculated position information so that it would not have to be recalculated when the position was needed at a later point in the calculation process. Additionally, Tanaka discloses a first and second coordinate system (Figure 2). It would have been obvious to one having ordinary skill in the art at the time of invention that position of the housing could be stored in either coordinate system. One would have been motivated to store the information in the second coordinate system to eliminate the need to perform a coordinate transform when the information was needed in the second coordinate system at a later point in the calculation process. The Examiner considers it inconsequential what object is located in the second coordinate system for use as a calibrating marker.

Additionally, Tanaka discloses first optical position information producing means producing information on the basis of the image information and indicative of the revising marker (column 2, lines 4-8). While Tanaka does not explicitly disclose storing the first optical position information (first optical position information storing means), to do so would have been obvious to one having ordinary skill in the art at the time of the

Art Unit: 2609

invention. One would have been motivated to store the information to reduce the processing load required by the producing means when the information was required at a later time. Also, it would have been obvious that any amount of optical position information could be stored (second optical position information storing means). As above, one would have been motivated to store the information to reduce the processing load required by the producing means when the information was required at a later time.

Tanaka also discloses means for producing estimated location information indicative of a position of the calibrating marker (column 1, line 65 to column 2, line 4). Means for storing the estimated location information are inherent in the system as the estimated location information is used in a later calculation. The Examiner considers it inconsequential what object is located in the second coordinate system for use as a calibrating marker.

While Tanaka does not disclose means for calibrating the second optical position information on the basis of the image information, Atsushi does disclose such means (page 2, paragraph 4). It would have been obvious to one having ordinary skill in the art at the time of invention to add the means for calibrating of Atsushi into the apparatus, method and program of Tanaka. One would have been motivated to do so to increase the positional accuracy of the camera calibration apparatus of Tanaka. Though Atsushi does not disclose it, it also would have been obvious to one having ordinary skill in the art to use the estimated location information in the calibration means. One would have



Art Unit: 2609

been motivated to do so because using an estimated location instead of relying solely on the calculated position would produce a better result.

**Claims 14/1, 14/3, 14/8, 14/11, 22/17, 22/19, 22/20 and 22/21:** Tanaka discloses an apparatus and method as in Claims 1, 3, 8, 11, 17 and 19-21 above, but does not disclose that the imaging device is mounted on a vehicle. However, Atsushi discloses a camera calibration method where the imaging device is mounted on a vehicle (page 2, paragraph 4). Therefore, it would have been obvious that the apparatus and method disclosed in Tanaka could also be used when mounted on a vehicle. One would have been motivated to do so to provide additional mobility to a simple camera calibrating apparatus.

#### ***Allowable Subject Matter***

15. Claims 4-7, 9, 10, 12, 13, 14/4, 14/5, 14/6, 14/7, 14/9, 14/10, 14/12 and 14/13 objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims. The prior art of record does not teach or render obvious the specific limitations of calibration value calculating means in Claims 4, 9 and 12. All other claims containing allowable subject matter are dependent from one of these three claims.

***Conclusion***

Any inquiry concerning this communication or earlier communications from the examiner should be directed to James A. Meyers whose telephone number is (571) 270-1690. The examiner can normally be reached on Mon-Fri 7AM-4PM (Alt Fridays Off).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, James Myhre can be reached on (571) 270-1065. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

JM  
5/9/2007

  
James W. Myhre  
Supervisory Patent Examiner